

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A dynamic vibration absorber comprising: a weight; a frame body which surrounds said weight; a plurality of vertically mounted U-shaped leaf springs which are interposed between said frame body and said weight in a direction perpendicular to a vertical direction so as to hold said weight with respect to said frame body movably with respect to all the directions in a plane and immovably in the vertical direction perpendicular to the plane and so as to determine a natural frequency for the weight; and a damping mechanism for damping the vibration of said weight in the plane, said plurality of leaf springs each having a concave surface,

wherein said frame body has a pair of X-direction vertical wall portions opposed to each other in an X direction in the plane with said weight disposed therebetween and a pair of Y-direction vertical wall portions opposed to each other in a Y direction which intersects the X direction in the plane with said weight disposed therebetween, said X-direction vertical wall portions and said Y-direction vertical wall portions each extending in vertical direction,

wherein at least a first two of said leaf springs are interposed between one of said pair of X-direction vertical wall portions and said weight in the X direction, and are opposed to each other in the Y direction, such that edge portions thereof extending in the vertical direction are secured to said one X-direction vertical wall portion, respectively, other edge portions thereof extending in the vertical direction are secured to said weight, respectively, and said concave surface of one of said at least first two of said leaf springs faces said concave surface of another one of said at least first two of said leaf springs,

wherein at least a second two of said leaf springs are interposed between another one of said pair of X-direction vertical wall portions and said weight in the X direction, and are opposed to each other in the Y direction, such that edge portions thereof extending in the vertical direction are secured to said other X-direction vertical wall portion, respectively, other edge portions thereof extending in the vertical direction are secured to said weight respectively, and

said concave surface of one of said at least second two of said leaf springs faces said concave surfaces of another one of said at least second two of said leaf springs,

wherein at least a third two of said leaf springs are interposed between one of said pair of Y-direction vertical wall portions and said weight in the Y direction, and are opposed to each other in the X direction, such that edge portions thereof extending in the vertical direction are secured to said one Y-direction vertical wall portions, respectively, other edge portions thereof extending in the vertical direction are secured to said weight, respectively, and said concave surface of one of said at least third two of said leaf springs faces said concave surface of another one of said at least third two of said leaf springs,

wherein at least a fourth two of said leaf springs are interposed between another one of said pair of Y-direction vertical wall portions and said weight in the Y direction, and are opposed to each other in the X direction, such that edge portions thereof extending in the vertical direction are secured to said other Y-direction vertical wall portions, respectively, other edge portions thereof extending in the vertical direction are secured to said weight, respectively, and said concave surface of one of said at least fourth two of said leaf springs faces said concave surface of another one of said at least fourth two of said leaf springs,

wherein said weight is held movably with respect to all the directions in the plane and immovably in the vertical direction perpendicular to the plane with respect to said pair of X-direction vertical wall portions and said pair of Y-direction vertical wall portions of said frame body only by means of said at least first two, said at least second two, said at least third two and said at least fourth two of said leaf springs, and

wherein the damping mechanism includes:

a first magnetic field generating body which is fixed to one of said weight and said one of said pair of X-direction vertical wall portions between said concave surfaces of said at least first two of said leaf springs in the Y direction and generates a magnetic field, and a first plate-shaped electric conductor which is fixed to another one of said weight and said one of said pair of X-direction vertical wall portions between said concave surfaces of said at least first two of said leaf springs in the Y direction and generates an eddy current by its relative movement with respect to said first magnetic field generating body,

a second magnetic field generating body which is fixed to one of said weight and said other of said pair of X-direction vertical wall portions between said concave surfaces of said at least second two of said leaf springs in the Y direction and generates a magnetic field, and a second plate-shaped electric conductor which is fixed to another one of said weight and said other of said pair of X-direction vertical wall portions between said concave surfaces of said at least second two of said leaf springs in the Y direction and generates an eddy current by its relative movement with respect to said second magnetic field generating body,

a third magnetic field generating body which is fixed to one of said weight and said one of said pair of Y-direction vertical wall portions between said concave surface of said at least third two of said leaf springs in the X direction and generates a magnetic field, and a third plate-shaped electric conductor which is fixed to another one of said weight and said one of said pair of Y-direction vertical wall portions between said concave surfaces of said at least third two of said leaf springs in the X direction and generates an eddy current by its relative movement with respect to said third magnetic field generating body, and

a fourth magnetic field generating body which is fixed to one of said weight and said other of said pair of Y-direction vertical wall portions between said concave surfaces of said at least fourth two of said leaf springs in the X direction and generates a magnetic field, and a fourth plate-shaped electric conductor which is fixed to another one of said weight and said other of said pair of Y-direction vertical wall portions between said concave surfaces of said at least fourth two of said leaf springs in the X direction and generates an eddy current by its relative movement with respect to said fourth magnetic field generating body.

Claims 2-5. (Canceled).

6. (Previously Presented) The dynamic vibration absorber according to claim 1, wherein the Y direction is perpendicular to the X direction.

7. (Canceled).

8. (Previously Presented) The dynamic vibration absorber according to claim 1, wherein each of said first to fourth magnetic field generating bodies has a pair of permanent magnets which generates a pair of magnetic poles of mutually different polarities which oppose each other with a gap therebetween so as to generate a magnetic field at a central portion of said electric conductor.

9. (Previously Presented) The dynamic vibration absorber according to claim 1, wherein said dynamic vibration absorber is tuned to a natural frequency of a structure where said dynamic vibration absorber is installed.

10. (Previously Presented) A dynamic vibration absorbing apparatus comprising a plurality of dynamic vibration absorbers according to claim 1, wherein a natural frequency for said weight of at least one of said dynamic vibration absorbers is different from a natural frequency for said weight of another one of said dynamic vibration absorbers.

11. (Original) The dynamic vibration absorbing apparatus according to claim 10, wherein the mass of said weight of said at least one of said dynamic vibration absorbers is different from the mass of said weight of said other one of said dynamic vibration absorbers.

12. (Previously Presented) The dynamic vibration absorbing apparatus according to claim 10, wherein a spring constant of said at least one of said dynamic vibration absorbers is different from a spring constant of said other one of said dynamic vibration absorbers.

13. (Previously Presented) The dynamic vibration absorbing apparatus according to claim 10, wherein a damping coefficient of said at least one of said dynamic vibration absorbers is different from a damping coefficient of said other one of said dynamic vibration absorbers.

14. (Currently Amended) A dynamic vibration absorber comprising: a weight; a frame body which surrounds said weight; a plurality of vertically mounted U-shaped leaf springs which are interposed between said frame body and said weight so as to hold said weight with

respect to said frame body movably with respect to all directions in a plane and immovably in a vertical direction perpendicular to the plane and so as to determine a natural frequency for the weight; and a damping mechanism for damping the vibration of said weight in the plane, said plurality of leaf springs each having a concave surface, at least a first two of said leaf springs are interposed between said frame body and said weight in X direction, said concave surface of one of said at least first two of said leaf springs facing said concave surface of another one of said at least first two of said leaf springs, and at least a second two of said leaf springs are interposed between said frame body and said weight in Y direction which intersects the X direction in the plane, said concave surface of one of said at least second two of said leaf springs facing said concave surface of another one of said at least second two of said leaf springs, the damping mechanism having a first damping device which is disposed in a space between and defined by said concave surfaces of said at least first two of said leaf springs, and a second damping device which is disposed in a space between and defined by said concave surfaces of said at least second two of said leaf springs, said weight being held movably with respect to all the directions in the plane and immovably in the vertical direction perpendicular to the plane with respect to said frame body only by means of said plurality of springs.

15. (New) A dynamic vibration absorber comprising: a weight; a frame body which surrounds said weight; a plurality of vertically mounted U-shaped leaf springs which are interposed between said frame body and said weight in a direction perpendicular to a vertical direction so as to hold said weight with respect to said frame body movably with respect to all the directions in a plane and immovably in the vertical direction perpendicular to the plane and so as to determine a natural frequency for the weight; and a damping mechanism for damping the vibration of said weight in the plane, said plurality of leaf springs each having a concave surface, wherein said frame body has a pair of X-direction vertical wall portions opposed to each other in an X direction in the plane with said weight disposed therebetween and a pair of Y-direction vertical wall portions opposed to each other in a Y direction which intersects the X direction in the plane with said weight disposed therebetween, said X-direction vertical wall portions and said Y-direction vertical wall portions each extending in vertical direction,

wherein at least a first two of said leaf springs are interposed between one of said pair of X-direction vertical wall portions and said weight in the X direction, and are opposed to each other in the Y direction, such that edge portions thereof extending in the vertical direction are secured to said one X-direction vertical wall portion, respectively, other edge portions thereof extending in the vertical direction are secured to said weight, respectively, and said concave surface of one of said at least first two of said leaf springs faces said concave surface of another one of said at least first two of said leaf springs,

wherein at least a second two of said leaf springs are interposed between another one of said pair of X-direction vertical wall portions and said weight in the X direction, and are opposed to each other in the Y direction, such that edge portions thereof extending in the vertical direction are secured to said other X-direction vertical wall portion, respectively, other edge portions thereof extending in the vertical direction are secured to said weight, respectively, and said concave surface of one of said at least second two of said leaf springs faces said concave surface of another one of said at least second two of said leaf springs,

wherein at least a third two of said leaf springs are interposed between one of said pair of Y-direction vertical wall portions and said weight in the Y direction, and are opposed to each other in the X direction, such that edge portions thereof extending in the vertical direction are secured to said one Y-direction vertical wall portions, respectively, other edge portions thereof extending in the vertical direction are secured to said weight, respectively, and said concave surface of one of said at least third two of said leaf springs faces said concave surface of another one of said at least third two of said leaf springs,

wherein at least a fourth two of said leaf springs are interposed between another one of said pair of Y-direction vertical wall portions and said weight in the Y direction, and are opposed to each other in the X direction, such that edge portions thereof extending in the vertical direction are secured to said other Y-direction vertical wall portions, respectively, other edge portions thereof extending in the vertical direction are secured to said weight, respectively, and said concave surface of one of said at least fourth two of said leaf springs faces said concave surface of another one of said at least fourth two of said leaf springs,

wherein said weight is held movably with respect to all the directions in the plane and immovably in the vertical direction perpendicular to the plane with respect to said pair of X-

direction vertical wall portions and said pair of Y-direction vertical wall portions of said frame body by means of said at least first two, said at least second two, said at least third two and said at least fourth two of said leaf springs, and

wherein the damping mechanism includes;

a first magnetic field generating body which is fixed to one of said weight and said one of said pair of X-direction vertical wall portions between said concave surfaces of said at least first two of said leaf springs in the Y direction and generates a magnetic field, and a first plate-shaped electric conductor which is fixed to another one of said weight and said one of said pair of X-direction vertical wall portions between said concave surfaces of said at least first two of said leaf springs in the Y direction and generates an eddy current by its relative movement with respect to said first magnetic field generating body,

a second magnetic field generating body which is fixed to one of said weight and said other of said pair of X-direction vertical wall portions between said concave surfaces of said at least second two of said leaf springs in the Y direction and generates a magnetic field, and a second plate-shaped electric conductor which is fixed to another one of said weight and said other of said pair of X-direction vertical wall portions between said concave surfaces of said at least second two of said leaf springs in the Y direction and generates an eddy current by its relative movement with respect to said second magnetic field generating body,

a third magnetic field generating body which is fixed to one of said weight and said one of said pair of Y-direction vertical wall portions between said concave surfaces of said at least third two of said leaf springs in the X direction and generates a magnetic field., and a third plate-shaped electric conductor which is fixed to another one of said weight and said one of said pair of Y-direction vertical wall portions between said concave surfaces of said at least third two of said leaf springs in the X direction and generates an eddy current by its relative movement with respect to said third magnetic field generating body, and

a fourth magnetic field generating body which is fixed to one of said weight and said other of said pair of Y-direction vertical wall portions between said concave surfaces of said at least fourth two of said leaf springs in the X direction and generates a magnetic field, and a fourth plate-shaped electric conductor which is fixed to another one of said weight and said other of said pair of Y-direction vertical wall portions between said concave surfaces of said at least

fourth two of said leaf springs in the X direction and generates an eddy current by its relative movement with respect to said fourth magnetic field generating body.

16. (New) A dynamic vibration absorber comprising: a weight; a frame body which surrounds said weight; a plurality of vertically mounted U-shaped leaf springs which are interposed between said frame body and said weight so as to hold said weight with respect to said frame body movably with respect to all directions in a plane and immovably in a vertical direction perpendicular to the plane and so as to determine a natural frequency for the weight; and a damping mechanism for damping the vibration of said weight in the plane, said plurality of leaf springs each having a concave surface, at least a first two of said leaf springs are interposed between said frame body and said weight in X direction, said concave surface of one of said at least first two of said leaf springs facing said concave surface of another one of said at least first two of said leaf springs, and at least a second two of said leaf springs are interposed between said frame body and said weight in Y direction which intersects the X direction in the plane, said concave surface of one of said at least second two of said leaf springs facing said concave surface of another one of said at least second two of said leaf springs, the damping mechanism having a first damping device which is disposed in a space between and defined by said concave surfaces of said at least first two of said leaf springs, and a second damping device which is disposed in a space between and defined by said concave surfaces of said at least second two of said leaf springs, said weight being held movably with respect to all the directions in the plane and immovably in the vertical direction perpendicular to the plane with respect to said frame body by means of said plurality of springs.